

What is claimed is:

1. A base station apparatus comprising:
 - priority determining means for determining priority
 - 5 for a communication terminal apparatus in communication;
 - transmission destination determining means for determining one or a plurality of communication terminal apparatuses to which packet transmission is performed based on the direction in which each communication
 - 10 terminal apparatus exists and said priority; and
 - directivity transmitting means for carrying out packet signal transmission with directivity to said determined communication terminal apparatus.
- 15 2. The base station apparatus according to claim 1, wherein the transmission destination determining means selects the communication terminal apparatus with the highest priority first and then selects the communication terminal apparatus with the highest priority from among
- 20 the communication terminal apparatuses except the communication terminal apparatus affected by the packet signal sent to the first selected communication terminal apparatus.
- 25 3. The base station apparatus according to claim 1, wherein when the directivity transmitting means divides communication terminal apparatuses into several groups

and carries out transmission with directivity formed group by group, the transmission destination determining means selects the communication terminal apparatus with the highest priority from each group.

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4. The base station apparatus according to claim 1, further comprising modulation system determining means for determining a packet signal modulation system based on the channel quality of the downlink, wherein the
10 directivity transmitting means modulates packets according to said determined modulation system and carries out transmission with directivity.

5. The base station apparatus according to claim 4, wherein
15 the modulation system determining means adopts a higher rate modulation system as the channel quality of the downlink increases.

6. The base station apparatus according to claim 4, further
20 comprising density calculating means for calculating the density of a peripheral area of the communication terminal apparatus determined by the transmission destination determining means and directivity width controlling means
for controlling directivity widths based on the
25 modulation system and said calculated density, wherein the modulation system determining means determines the modulation system of the packet signal based on said

calculated density and the directivity transmitting means carries out transmission with directivity under the control of said directivity width controlling means.

- 5 7. The base station apparatus according to claim 6, wherein
the modulation system determining means adopts a higher
rate modulation system as the density calculated by the
density calculating means decreases.
- 10 8. The base station apparatus according to claim 6, wherein
the directivity width controlling means controls the
directivity width so that the directivity width becomes
narrower for a higher rate modulation system.
- 15 9. The base station apparatus according to claim 6, wherein
the directivity width controlling means controls the
directivity width so that the directivity width becomes
narrower as the density calculated by the density
calculating means increases.
- 20 10. The base station apparatus according to claim 6,
further comprising speed detecting means for detecting
the speed of a communication terminal apparatus
determined by the transmission destination determining
25 means, wherein the modulation system determining means
determines the packet signal modulation system based on
said detected speed and the directivity width controlling

11. The base station apparatus according to claim 10, wherein the modulation system determining means adopts a lower rate modulation system as the speed detected by the speed detecting means increases.

12. The base station apparatus according to claim 10,
10 wherein the directivity width controlling means controls
the directivity width so that the directivity width
becomes wider as the speed detected by the speed detecting
means increases.

15 13. A communication terminal apparatus that carries out
a radio communication with the base station apparatus
according to claim 1 and receives packet signals sent
from said base station apparatus.

20 14. A packet transmission method for a base station
apparatus comprising the steps of:

determining priority for a plurality of communication terminal apparatuses in communication in descending order of the channel quality of the downlink;

25 determining one or a plurality of communication
terminal apparatuses to which packet transmission is
performed based on the direction in which each

communication terminal apparatus exists and said
priority; and

carrying out packet signal transmission with
directivity to said determined communication terminal
5 apparatus.

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